

Claim Summary

By this Amendment, claims 1, 17 and 19 have been amended, and claim 3 has been cancelled.

Accordingly, claims 1-2 and 4-21 are now pending in the application.

35 U.S.C. ¶103 – Claims 1-3, 6-8, 13 and 15-21

Claims 1-3, 6-8, 13 and 15-21 were rejected under 35 U.S.C. ¶103 as being unpatentable over Colpo et al. (US 6682630) in view of Nguyen (US 6565661).

The Examiner apparently contends that one skilled in the art would be motivated to incorporate the showerhead of Nguyen into the device of Colpo et al. As discussed below, Applicants respectfully disagree.

Colpo et al. discloses plasma processing apparatus having a showerhead including fluid transfer tubes/pipes 42, 44 that extend into the processing space 50. A sheet of dielectric material 80 is fitted onto the lower face of the showerhead 38 and around the outer surface of the pipes. The purpose of the sheet 80 is to protect the magnetic core face plate 38 against contamination. See column 9, lines 38+ of Colpo et al. As such, one of ordinary skill clearly would not consider replacing a contamination-preventing sheet with the gas-distributing shower head plate of Nguyen.

Further, in Colpo et al. the ends of the fluid delivery tubes/pipes 42 are welded to the sheet 80 (see column 10, lines 13-16) and so not only would a gas distribution plate be unnecessary, the diameter of the apertures in any plate through which the tubes pass could not be any less than the diameter of the tubes themselves or any other apertures through which the tubes pass. Further, the face plate of Nguyen is thicker than conventional shower head plates (see column 6 lines 23 to 34) and so it would be counter-intuitive to the skilled person to consider replacing the sheet of Colpo et al. with a heavier plate.

Still further, in Colpo et al. there is a gap between the surface of the face plate 38 and the sheet 80. See column 10, lines 7-10 of Colpo et al. As such, if even one of ordinary skill were somehow motivated to attempt to replace the anti-contamination sheet 80 with the showerhead plate of Nguyen, then the arrangement would still not be the same as that specified in the amended claims. Note also that the presence of a gap would mean that the plate would not function to create a pressure differential as with the sheet.

As discussed on page 9 of the present specification, using a thin sheet with apertures of small diameter that form the gas control flow orifices means that a pressure differential can be created, thus eliminating the need for a faceplate having variable diameter orifices. Using the faceplate of Nguyen would not result in the manufacturing advantages provided by the claimed sheet, i.e., forming small holes in a sheet is easier and less expensive than through a thick face plate.

For at least the reasons stated above, Applicants respectfully contend that all of the now-pending claims define over the Colpo et al. and Nguyen references, taken individually or in combination.

35 U.S.C. ¶103 – Claims 1, 4, 5 and 7-21

Claims 1, 4, 5 and 7-21 were rejected under 35 U.S.C. ¶103 as being unpatentable over Doppelhammer (US 6533867) in view of Nguyen (US 6565661), and further in view of Arami et al. (US 5938850).

However, it is believed that this rejection has been rendered moot by the incorporation of the subject matter of original claim 3 (now cancelled) into each of the independent claims 1, 17 and 19.

In this regards, it is noted that even if one of ordinary skill was somehow motivated to replace the the lower diffusion screen 46 of Doppelhammer with the plate of Nguyen, the resultant would still include a gap between the mesh 45 and

the faceplate 46. Note that Doppelhammer teaches the use of a webbed disk 424 to separate the two components 45, 46.

For at least the reasons stated above, Applicants respectfully contend that all of the now-pending claims define over the Doppelhammer, Nguyen and Arami et al. references, taken individually or in combination.

Conclusion

No other issues remaining, reconsideration and favorable action upon the claims 1-2 and 4-21 now pending in the application are requested.

Respectfully submitted,
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